

REMARKS

Applicants' counsel thanks Examiner Dougherty for her continued thorough examination of the present application.

Claims 9, 14, 18 and 20 have now been rejected under 35 USC § 103 as being allegedly obvious over Moake or Morris in further view of Kruger. Office action, ¶¶2-3.

All of these claims recite a mud motor and a pocket or a mount for a sonde provided in the mud motor itself; i.e. in an outer housing of the mud motor (claims 9, 14 and 20), and in a coupler between the bit box and bearing mandrel of the mud motor (claim 18).

With respect to both Moake and Morris, the Examiner suggests that these references include all of the limitations of the recited claims except the teaching to use a sensor device in the housing of a mud motor. Office action, ¶¶2-3.

Respectfully, it is the mud motor itself that is missing from these references. The Examiner has pointed to Moake and Morris to show various features alleged to be those recited in claims 9, 14, 18 and 20, except that in all of these claims every one of the recited features is provided in the mud motor, which is totally absent from both Moake and Morris. Stated another way, every one of the limitations alleged by the Examiner to be present in Moake and Morris is present in the recited claims as a limitation on the mud motor itself. It makes no sense to suggest that one reference teaches all of the limitations of a claim, except the basic element (mud motor) to which every one of the cited limitations relates and modifies, and then to look to another reference, having none of the cited limitations, to provide the basic element. As a crude analogy, such is akin to rejecting a claim for the novel combination of a vacuum cleaner with a dust filter based on a reference showing a furnace with a dust filter. True, both devices have the filter, but clearly the latter lacks the essential base element making the combination novel, i.e. the vacuum cleaner.

Similarly here, it is the combination of a mud motor *with a pocket or mount for a sonde* that is novel, and which was heretofore unknown in the art. It is improper to reject this combination based on references which do not even disclose a mud motor on the basis that the mud motor can be supplied by a third reference having no common purpose or motivation with the present invention, or even with either of the base references (Moake and Morris).

Turning to the references substantively, regarding Moake, at col. 5 lines 23-48, the assembly disclosed in Moake (Figs. 1-3) does not include a sonde or a pocket for receiving a sonde in the housing of a mud motor. Rather, the illustrated bottom hole assembly (BHA) includes a “logging-while-drilling” (LWD) tool and not a mud motor. In fact, Moake explicitly describes the use of a mud motor as an alternative to driving the drillstring from the surface, the method used in Moake. See col. 5 lines 45-48.

Thus, the apparatus of Moake does not disclose providing a sonde or a pocket for a sonde in the tubular outer housing of a mud motor because the use of a mud motor is considered and described only as an “alternate embodiment” for which no description is provided. Nowhere in Moake is it disclosed or suggested how a sonde might or would be positioned or oriented relative to a mud motor if one were included, nor is the combination of a sonde with a mud motor even contemplated.

The claimed structure is not made obvious by the combination of Moake with Kruger. Kruger discloses a mud motor having a variety of sensors for monitoring the performance of the mud motor; not the direction/location/orientation of the drilling assembly for which a sonde would be used. Referring, e.g., to claim 9 herein, the present invention provides a mud motor with “a tubular housing” and a “receiving pocket in the exterior surface [of the tubular housing of the mud motor] sized to receive a sonde.” (The other claims noted above are drawn to various structures, each including a mud motor and a pocket or mount for a sonde in the mud motor structure). While Kruger *does* disclose directional/azimuth type sensors, in Kruger these sensors are not located in the mud motor. Rather, they are located in a

separate housing that is or can be coupled to the mud motor as part of the drill string. “[Directional] measuring devices are preferably placed between the drill bit and the mud motor power section,” and not in the mud motor itself. Kruger, col. 3 lines 27-29, and col. 6 lines 37-43, referring to and incorporating Pat. No. 5,325,714, which is of record in the present application, and which shows these sensors in a separate MWD (measuring-while-drilling) tool which is coupled to the drill motor. See, e.g., claim 1 of ‘714.

Clearly, combining Moake and Kruger would not result in the structure of the above-noted rejected claims. At best, the combination would result in the conventional prior art apparatus having directional sensors located elsewhere in the drillstring, not in the mud motor as claimed.

Furthermore, the suggested motivation to make the proposed combination is incorrect. The Examiner states in ¶2 of the Office action “it would have been obvious to place the sensor assembly of Moake into the housing of a mud motor, in order to give the bit operator information about the mud motor, as taught by Kruger.” First, the “sensor” in Moake is not a sonde, rather it is a piezoelectric transducer 48 that measures the distance from the sensor to the borehole wall using an ultrasonic signal 62 that is reflected from the borehole wall. See Fig. 3 and specification of Moake at col. 6 lines 42-54. By orienting three of these piezoelectric transducers 48 circumferentially equidistant around the perimeter of the disclosed LWD (logging-while-drilling) tool 30 of Moake, one can determine the alignment of the tool 30 within the borehole; i.e. one can know if the tool 30 is *centered* in the hole, but not its *location* or *orientation* under the earth’s surface. Therefore, by simply incorporating this “sensor” into Kruger, one would not arrive at the structure of any of the claims of the present application.

Second, the present invention is not concerned with providing information to an operator regarding the condition of the mud motor. The Examiner is absolutely correct in noting this is the precise purpose in Kruger, but it has nothing to do with (and supplies no motivation) to place a sonde in the motor housing. A sonde is a

device that transmits an electromagnetic signal to a distant receiver to relate information regarding its exact position and orientation, i.e. its pitch, clock and depth. See specification, page 2 lines 3-35. Therefore, the mud motor sensors provided in the mud motor of Kruger do not perform the same function or serve the same purpose as providing the sonde of the present invention in the mud motor housing. Certainly, they provide no motivation to place a sonde (or a pocket or mount for a sonde) in the tubular housing of a mud motor as in the present invention.

For these reasons, it is respectfully submitted that the combination of Moake with Kruger is improper for lack of motivation and cannot support a rejection under Section 103. It is also respectfully submitted that, even assuming the combination, the structure of a mud motor having a tubular outer housing and a sonde pocket provided in the outer surface thereof is not achieved by combining these references. Therefore, it is respectfully submitted that the rejection of claim 9 based on Moake and Kruger has been overcome.

All of the foregoing arguments with respect to the combination of Moake with Kruger apply with equal weight regarding the combination of Morris with Kruger. Like Moake, Morris does not disclose a mud motor having a sonde or a pocket or mount for a sonde therein as recited in the claims. In fact, Morris is even more inapplicable than Moake in that Morris is absolutely silent as to the use or structure of a mud motor, and does not even contemplate a mud motor at all. Clearly, Morris provides no teaching or suggestion to provide a sonde in a mud motor. Nor does Morris provide any motivation to combine with Kruger as the Examiner has suggested. Similarly as with Moake, even if the combination were made the resulting structure would not resemble that claimed in the present application.

Accordingly, in view of all of the foregoing remarks it is respectfully submitted that all of the rejections of claims 9, 14, 18 and 20 have been overcome, and each of these claims is now in condition for allowance.

Claim 17 has been rejected under 35 USC § 103 as being obvious over Morris in view of Kruger. Claim 17 recites "a mud motor having a tubular outer housing [having] an interior surface and an exterior surface, said tubular outer housing comprising a collar having an interior surface and an exterior surface removably attached at the inner surface of the collar to the outer surface of the tubular housing, a receiving pocket in the exterior surface of the collar shaped to receive a sonde, ...and a cover plate, removably attached to the collar over the receiving pocket, functioning to hold the sonde...in place." For the reasons explained with respect to claims 9, 14, 18 and 20, the combination of Morris and Kruger is not proper and cannot support the Section 103 rejection. Also as explained above, even if made, the combination would not anticipate the structure recited in claim 17. In particular, claim 17 recites certain additional structure which is utterly absent from any of the cited references, namely "a receiving pocket in the exterior surface of the collar shaped to receive a sonde, ...and a cover plate, removably attached to the collar over the receiving pocket, functioning to hold the sonde...in place."¹ Accordingly, the rejection of claim 17 has been overcome, and this claim is also allowable over the cited references.

In view of all of the above, it is respectfully submitted that claims 9, 14, 17, 18 and 20 are now all allowable over the cited references. All remaining claims are dependent claims, and are thus also believed allowable by virtue of their dependency on an allowable independent claim.

Should the Examiner have any questions or comments regarding the instant response, she is invited to please contact the undersigned at the phone number listed below.

¹ The Examiner argues that transmitter housing 4 in Morris is the same as the collar with shock resistant housing in claim 17. However, claim 17 recites, separately, a tubular outer housing of the mud motor, and a removable collar attached at its inner surface to the outer surface of the tubular housing. Therefore, the collar is a separate element from the housing, not present in Morris.

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If there are any additional fees resulting from this communication, please charge same to our Deposit Account No. 16-0820, our Order No.32237US2.

Respectfully submitted,

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